



Behavioral Symptoms With a Medical Basis

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Overview

- ★ Sleep disorders
 - Night terrors (*pavor nocturnus*)
 - Sleep-walking (somnambulism)
 - Enuresis
- Breath-holding spells
 - Cyanotic spells
 - Pallid spells
- Constipation and encopresis



Sleep Disorders

Sleep Disorders

★ Normal sleep

- NREM (80%)

- ◆ Stage 1
- ◆ Stage 2
- ◆ Stage 3
- ◆ Stage 4 – the mind asleep, the body awake

- REM (20%) – the mind awake, the body asleep

- ◆ EEG similar to stage 1 but with increased heart and respiratory rate, and rapid eye movement

Sleep Disorders

- ★ Children's sleep cycles change considerably with increasing age
- By age 5, most children have developed a mature pattern of sleep
- Thereafter, the only change is a gradual reduction of total sleep time to 7 or 8 hours



Night Terrors

- ★ Also called *pavor noctutnus*
- ▢ Occur in 1% to 5% of children, typically age 2 to 6 years
- ▢ Characteristic episode:
 - About 90 minutes after falling asleep
 - Child sits up suddenly with a loud scream or cry for help
 - Parents find child hallucinating, dissociated, confused, and unresponsive



Night Terrors

□ Characteristic episode (continued):

- Child displays a great deal of body movement, even somnambulism
- Parents feel helpless and frightened
- Typical episode lasts a few minutes
- Child returns to sleep immediately and has amnesia for the event



Night Terrors

- ★ Night terrors occur from stage-4 sleep
- ▢ Tremendous autonomic discharge – increase in heart rate occurs more rapidly than in any other human response
- ▢ Cause is obscure
- ▢ Night terrors may occur as a single event in a child's life, may occur once or twice a month



Night Terrors

- ★ Treatment , other than reassurance, is unnecessary unless episodes are recurrent and frequent
 - ▢ 50% cease by age 8, 36% persist into adolescence
 - ▢ May respond to **scheduled wakening**
 - ▢ If attacks become common treatment with imipramine may be considered



Sleep-walking

- ▣ Somnambulism is a fairly common childhood sleep disorder
- ▣ Occurs at least once in about 15% of children
- ▣ In a small percentage (more commonly boys) it can occur as often as 4 times a week



Sleep-walking

- Sleep-walking occurs out of stage-3 or stage-4 sleep
- Characteristic episode:
 - Occurs in first 1/3rd of the night
 - Sudden body movement the child sits up abruptly
 - Child may sit up briefly then lie back down, or may leave the bed



Sleep-walking

- Characteristic episode (continued):
 - Body movements are clumsy and wooden, but purposeful
 - Child may open doors and avoid furniture, may even play with toys
 - Child may talk, may respond if spoken to
 - Speech is unintelligible, child will never initiate conversation
 - Amnesia for the event, even if awakened immediately



Sleep-walking

- Sleep-walking requires no treatment unless frequent
- Since the sleep-walker functions at a low level of awareness, there is potential risk of injury



Sleep-walking

- ▮ Initial attention should be given to providing a safe environment (locking doors, blocking stairs, etc.)
- ▮ For sleep-walking that is frequent and long-term, treatment with imipramine, 10 mg to 50 mg, may be helpful
- ▮ May respond to **scheduled wakening**



Enuresis

- ❑ Disclaimer - while there may be multiple causes of bed-wetting, a substantial portion are related to abnormal sleep patterns
- ❑ Primary nocturnal enuresis is a disorder of arousal
- ❑ Bed wetting occurs out of stage-4 sleep with rapid shift to stage-2 or stage-1



Enuresis

- ▣ Children with enuresis are commonly described as “very deep sleepers”
- ▣ Nocturnal enuresis is quite common
 - 18% at age 4
 - 8% at age 8
 - 5% at age 10
 - 2% into adolescence



Enuresis

- Spontaneous resolution occurs at a rate of 15% per year after age 6
- Family history is positive in 80%
- Diagnosis of “primary nocturnal enuresis” requires:
 - Normal development
 - Normal urinalysis
 - Normal neurological exam



Enuresis

- ▮ Treatment needs to include explanation and reassurance
- ▮ Children should not be punished, but should avoid waking their parents and should help with clean-up
- ▮ Further intervention can be discussed for girls over 7 or boys over 8



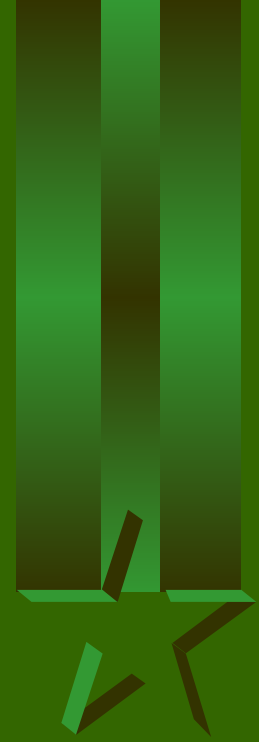
Enuresis

- ★ Treatments that usually do *not* work:
 - “Bladder training”
 - Bed-wetting alarms
- Treatments that control symptoms (do not “cure” the condition):
 - Imipramine – begin at 1 mg/kg at bedtime
 - DDAVP – 1 to 4 sprays (nasal) - or - 1 to 3 tablets (oral)
 - Ditropan (+/-)

Sleep Disorders

- ★ There is some commonality between these disorders
 - All occur primarily from stage-4 sleep
- There is some overlap between these disorders
 - Many children display 2 or more of these disorders





Breath-holding

Breath-holding

- ▢ Two types
 - Pallid spells
 - Cyanotic spells



Breath-holding

- ★ May occur at any age from birth through 6 years
- ▢ Peak incidence 18 months to 4 years
- ▢ Girls and boys equally affected
- ▢ Family history is positive in 33%
- ▢ Children are very energetic and reactive
- ▢ Spells may occur up to several times a day



Cyanotic Breath-holding

- ★ Precipitated by anger or frustration
- ▢ May be regarded as a type of temper tantrum
- ▢ Anger or frustration is followed by crying that lasts less than 15 seconds
- ▢ Child holds breath in expiration, and progressive cyanosis develops



Cyanotic Breath-holding

- During the first 10 to 15 seconds, the child remains conscious and aware of surroundings
- During that period, a counter stimulus such as cold water in the face may abort the spell
- If not aborted, the child will lose consciousness and collapse limply



Cyanotic Breath-holding

- ▮ In many cases, a seizure-like episode will follow
- ▮ The apneic phase ends with a gasp, and the cyanosis quickly abates
- ▮ Though drowsiness may follow, it is common for children to resume normal activity immediately
- ▮ Main differential consideration is epilepsy



Cyanotic Breath-holding

	<u>Breath-holding</u>	<u>Epilepsy</u>
Precipitating event	Always	Not apparent
Crying	Almost always	Not usually
Cyanosis	Occurs before LOC	If present, occurs after attack in progress
Opisthotonos	Usually	Rarely
EEG	Usually normal	Usually abnormal
Clonus	After limpness	After tonus

Pallid Spells

- ★ Usually precipitated by minor injuries or sudden fright
- Occipital blows seem especially potent
- Common in children beginning to walk
- Stimulus is followed by pallor, limpness, and collapse



Pallid Spells

- Cyanosis is absent by definition
- Resembles fainting in adults
- Many of these children are prone to fainting when older
- Main differential consideration is concussion



Breath-holding Treatment

- ★ After thorough history and physical, the parents need **calm reassurance**
 - Everything is fine
- Advise that future occurrences be treated with **purposeful neglect**
 - Assure safety
 - Avoid secondary gain



Breath-holding Treatment

- ▣ Depletion of iron stores is associated with breath-holding spells
- ▣ Frank anemia may or may not be present
- ▣ One study (Daoud *et al.* Effectiveness of iron therapy on breath-holding spells. *J Pediatr.* 1997;130:547-550) suggests empiric treatment with iron





Encopresis

Constipation With Encopresis

- ▣ Encopresis is the involuntary passage of feces without organic cause
- ▣ The incidence is approximately 1.5%
- ▣ Males are 6 times as likely as female to develop encopresis
- ▣ Typical age range is 6 to 8 years



Constipation With Encopresis

- ★ Chief complaint is usually soiling of the underwear, most commonly in the late afternoon
- The cardinal feature is “stool-hoarding”
- Parents describe infrequent bowel movements, large-caliber stool (“stops up the toilet”), and discomfort from the passage of stool

Constipation With Encopresis

- ▣ Prolonged retention of stool leads to:
 - Impaction
 - Rectal distention
 - Loss of bowel tone
 - Loss of anal sensation through accommodation
 - Finally, psychogenic megacolon
- ▣ Psychogenic megacolon is 75 times more common than Hirschprung's disease



Constipation With Encopresis

- ★ Hirschprung's is the main differential consideration
- Digital rectal exam
 - With Hirschprung's, the rectum is empty
 - With psychogenic megacolon, the rectum is usually impacted with stool
- ★ Rarely, endocrine disorders, anticholinergic medications, or spinal cord disease can cause encopresis



Constipation With Encopresis

- ★ Treatment in three phases:
 - Cleanout
 - Maintenance
 - Behavior modification

Constipation With Encopresis

- ★ Cleanout (may need to be quite aggressive)
 - Allow 2 to 5 days
 - Hypertonic phosphate (Fleets®) enemas
 - ◆ 1 ounce per 10 kg, up to 4.5 oz
 - Polyethylene glycol (GoLYTELY®) nasogastric drip
 - ◆ 10 to 40 ml/kg/hour for 12 to 36 hours

Constipation With Encopresis

- ★ Maintenance (3 to 12 months or longer)
 - Fiber (Citrocel®, Metamucil®, Fibercon®)
 - Lubricant – mineral oil (Kondremul®)
 - ♦ Initially large doses – 1 to 2 ounces BID
 - ♦ Titrate dose as oil appears in potty
 - Osmotic agent – lactulose
 - ♦ 1 to 2 ml/kg/day

Constipation With Encopresis

★ Behavior modification

- Take advantage of gastro-colic reflex
 - ♦ Sit on potty for 5 to 10 minutes after each meal and at bedtime
- Employ positive reinforcement
 - ♦ Reward for sitting, “special” reward for success
- Insure success
 - ♦ Morning (after breakfast) use of Dulcolax® suppositories every 2 to 3 days may be necessary

Constipation With Encopresis

- ★ Parents and child must be confident of success
- ▢ Compliance is often a problem, and close follow-up is necessary
- ▢ Failure occurs from lack of confidence in the treatment and/or cessation of treatment before child is adequately re-trained



References

- Kales A., Kales J.D.: Sleep Disorders. N. Engl. J. Med. 290:487, 1974
- Kales A., et al.:Hereditary factors in sleepwalking and night terrors. Br. J. Psychiatry 137:111, 1980
- McClain L.G.: Childhood enuresis. Curr. Probl. Pediatr. 9(8):4, 1979
- Smith L.R.: Nocturnal enuresis. Pediatr. Rev. 2(6):183-186, 1980
- DiMario F.J.: Prospective Study of Children With Cyanotic and Pallid Breath-Holding Spells. Pediatr. 107:265-269, 2001
- Livingston S.: Breath-holding spells in children. J.A.M.A. 212:2231, 1970
- Daoud A., et al.: Effectiveness of iron therapy on breath-holding spells. J. Pediatr. 130:547-550, 1997
- Abi-Hanna, A., et al.: Constipation and encopresis in childhood. Pediatr. Rev. 19:23-30, 1998
- Sibler D.L.: Encopresis: Discussion of etiology and management. Clin. Pediatr. 8:225, 1969



Questions?

Sleep Disorders?

Breath-holding?

Encopresis?